

PROJECT ADMINISTRATION DATA SHEET

ORIGINAL  REVISION NO. \_\_\_\_\_

Project No. A-3920 GTRI ~~XXX~~ DATE 8 / 15 / 84

Project Director: Thomas S. Taylor ~~XXXX~~ Lab ECSL

Sponsor: Thermo Materials Corporation

Type Agreement: P. O. No. 0-1479

Award Period: From 8/2/84 To 10/2/84 (Performance) 10/2/84 (Reports)

Sponsor Amount: This Change Total to Date

Estimated: \$ 1,800 \$ 1,800

Funded: \$ 1,800 \$ 1,800

Cost Sharing Amount: \$ None Cost Sharing No: N/A

Title: Dielectric Constant Measurements for Fused Silica Materials

ADMINISTRATIVE DATA

1) Sponsor Technical Contact:	OCA Contact	Brian J. Lindberg	x-4820
<u>Mr. Don Kenagy</u>	2) Sponsor Admin/Contractual Matters:	<u>Mr. Don Kenagy</u>	
<u>Thermo Materials Corporation</u>		<u>Thermo Materials Corporation</u>	
<u>3449 Church Street</u>		<u>3449 Church Street</u>	
<u>Scottdale, Georgia 30079</u>		<u>Scottdale, Georgia 30079</u>	
<u>(404) 292-4242</u>		<u>(404) 292-4242</u>	

Defense Priority Rating: N/A Military Security Classification: N/A  
(or) Company/Industrial Proprietary: N/A

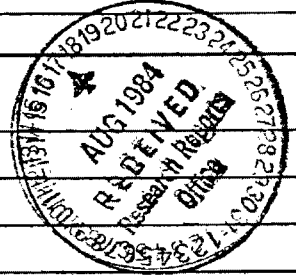
RESTRICTIONS

See Attached N/A Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

Equipment: Title vests with None proposed or anticipated.

COMMENTS:



COPIES TO: Sponsor's I.D. No. 01.269.000.85.001

Project Director	Procurement/EES Supply Services	GTRI
Research Administrative Network	Research Security Services	Library
Research Property Management	<u>Reports Coordinator (OCA)</u>	Project File
Accounting	Research Communications (2)	Other <u>I. Newton</u>

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 10/23/84

Project No. A-3920

~~SCSL~~ Lab ECSL

Includes Subproject No.(s) \_\_\_\_\_

Project Director(s) Thomas S. Taylor

GTRC  
~~GTRI~~ / ~~GTX~~

Sponsor Thermo Materials Corp.

Title Dielectric Constant Measurements For Fused Silica Materials

Effective Completion Date: 10/2/84 (Performance) 10/2/84 (Reports)

Grant/Contract Closeout Actions Remaining:

- None
- Final Invoice or Final Fiscal Report
- Closing Documents
- Final Report of Inventions
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other \_\_\_\_\_

Continues Project No. \_\_\_\_\_

Continued by Project No. \_\_\_\_\_

COPIES TO:

Project Director (Taylor)  
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 Research Communications (2)  
 Project File  
 Other A. Jones  
M. Heyser



Georgia Institute of Technology  
ENGINEERING EXPERIMENT STATION  
Atlanta, Georgia 30332

15 September 1984

Mr. Don Kenagy  
Thermo Materials Corporation  
3449 Church Street  
Scottdale, Georgia 30079

Dear Mr. Kenagy:

We are pleased to present the data from our dielectric property measurements of six different fused silica materials. The measurement technique that was used was a shorted circular waveguide technique using a Hewlett-Packard 8510 automated network analyzer. After system calibration, the measurement technique was verified by measuring a standard fused quartz sample. This data is also included in the dielectric properties table.

The fused silica samples were not homogeneous as evidenced by the air pockets visible on the front and back surface. This can produce a small error in determining the dielectric properties from the measured reflection coefficient since the computational method expects a homogeneous material. However, these errors are believed to be very small for these materials. The samples fit very snugly and so the error attributed to the air gap around the sample is also considered to be very small. The 0.5 and 0.75 inch thick samples yielded much better loss tangent values, and so the loss tangent values obtained with the 0.25 inch thick samples were discarded.

Sincerely,

Thomas S. Taylor/  
Research Scientist II

TST:bg

TABLE 1

## DIELECTRIC PROPERTIES OF FUSED SILICA

<u>Material Code</u>	<u>Dielectric Constant</u>	<u>Loss Tangent</u>
B	3.17 ± 0.02	0.0028 ± 0.002
BI	3.18 ± 0.02	0.0035 ± 0.002
H	3.20 ± 0.02	0.0045 ± 0.002
HI	3.23 ± 0.02	0.0045 ± 0.002
I	3.25 ± 0.02	0.0045 ± 0.002
X	3.21 ± 0.02	0.0045 ± 0.002
Fused Quartz	3.825 ± .001	<.001